UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

CYWEE GROUP LTD., Plaintiff, vs. HUAWEI DEVICE CO. LTD., HUAWEI DEVICE (DONGGUAN) CO. LTD., AND HUAWEI DEVICE USA, INC., Defendants.	§	CASE NO. 2:17-cv-00495-WCB-RSP JURY TRIAL REQUESTED

HUAWEI'S RESPONSIVE CLAIM CONSTRUCTION BRIEF

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Defendants Huawei Device Co. Ltd., Huawei Device (Dongguan) Co. Ltd., and Huawei Device USA, Inc. (collectively "Huawei") submit this claim construction brief, responding to the brief submitted by plaintiff CyWee Group Ltd. ("CyWee") and explaining the proper constructions of the disputed terms of U.S. Patents Nos. 8,441,438 ("the '438 patent") and 8,552,978 ("the '978 patent").

I. GENERAL TECHNICAL BACKGROUND

The two patents at issue describe and purport to claim well-known solutions long deployed in the field of motion sensing. Welch Decl. ¶ 40. The Kalman filter dates back to 1960, and is a time-honored solution for correcting errors in noisy linear data. *Id.* ¶ 41. The extended Kalman filter, which updates the Kalman filter to allow for correction of noisy non-linear data, dates back to at least 1962. *Id.* Those in the field have long known how to: (i) combine results from multiple sensors (specifically including magnetometers, accelerometers, and gyroscopes) to calculate orientation; (ii) correct errors using a Kalman filter, extended Kalman filter, or other techniques; (iii) and combine those two capabilities. *Id.* ¶¶ 42-44. These techniques, sometimes called "sensor fusion," can provide more accurate orientation estimates. *Id.* ¶ 45. For example, sensor fusion may help to correct for certain sensor-specific problems that might otherwise affect the result if only one type of sensor is used. *Id.* ¶ 44.

The patents describe using a sensor fusion algorithm and either a six-axis motion sensor module (in the '438 patent) or a nine-axis motion sensor module (in the '978 patent) to determine the motion of a "3D pointing device" so that results corresponding to that motion can be shown on a "display device."[1] *See* Cywee's Opening Claim Construction Brief ("CyWee Br."), Dkt. No. 79, at 1. The claimed six-axis sensor module uses two types of sensors: one to detect axial acceleration and one to detect angular velocity. *E.g.*, '438 patent at 4:7-19, 4:59-65, 6:1-

[1] Independent claims 1, 10, 14, and 19 (and dependent claims 5-8, 11-13, and 15-17) of the '438 patent each recite a "six-axis motion sensor module." The two independent claims of the '978 patent (1 and 10) each recite a "nine-axis motion sensor module." The specifications of each patent consistently refer to a "sensor module."

18. Each sensor is a three-axis sensor that can detect along each of x, y, and z axes, making the module a six-axis motion sensor module. Welch Decl. ¶ 38. The nine-axis motion sensor module in the '978 patent adds a three-axis magnetometer, which measures the Earth's magnetic field along three axes. '978 patent at 10:46-49; Welch Decl. ¶ 38.

CyWee and the inventors acknowledge that they did not invent 3D pointing devices, display devices, or any type of motion sensor. *See* Ex. C at CYWEE_HUAWEI013326; CYWEE_HUAWEI013444. Nor do they claim to be the first to employ the concept of "sensor fusion." *See, e.g.*, '438 patent at 2:38-47. CyWee's expert Dr. Joseph LaViola acknowledges this as well.[2]

II. LEGAL STANDARDS

Claim terms are construed as understood by a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (*en banc*). The claim language provides guidance as to the correct construction. *Id.* at 1314. Further, "the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Id.* at 1313. "The specification is 'the single best guide to the meaning of a disputed claim term,' and, usually, the specification's use of a claim term is dispositive." *Eon-Net LP v. Flagstar Bancorp*, 653 F.3d 1314, 1320 (Fed Cir. 2011) (quoting *Phillips*, 415 F.3d at 1315). "In addition to consulting the specification," the Court "should also consider the patent's prosecution history, if it is in evidence." *Phillips*, 415 F.3d at 1317. "Like the specification, the prosecution history provides evidence of how the PTO and the inventor understood the patent." *Id.* Finally, while the Court of Appeals has "also authorized district courts to rely on extrinsic evidence," it is "less reliable than the patent and its prosecution history

[2] *See* Declaration of Joseph LaViola in Support of CyWee's Opening Claim Construction Brief ("LaViola Decl."), Dkt. No. 79-6, at ¶ 56 (equating sensor fusion with a "nonlinear estimator such as an Extended Kalman filter"), ¶ 9 (noting that he worked with extended Kalman Filters "for over 15 years").

in determining how to read claim terms," and the Court must carefully "filter[] the useful extrinsic evidence from the fluff." *Id.* at 1317-18. Further, the Court must ensure that it "does not contradict any definition found in or ascertained by a reading of the patent documents." *Id.* at 1322-23.

Patent claims must particularly point out and distinctly claim the subject matter which the applicant regards as the invention. 35 U.S.C. § 112 ¶ 2.[3] A patent is indefinite "if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124 (2014). This requirement assures that patents "afford clear notice of what is claimed, thereby 'apprising the public of what is still open to them.'" *Id.* at 2128–29 (citation omitted). A claim term is indefinite, for example, when it has multiple divergent yet equally plausible interpretations. *See, e.g., Innovative Display Techs. LLC v. Hyundai Motor Co.*, No. 2:14-201-JRG, 2015 WL 2090651, at *21–22 (E.D. Tex. May 4, 2015); *Harcol Research, LLC v. Europa Sports Prods.*, No. 2:13-CV-228-JRG-RSP, 2014 WL 5603653, at *7 (E.D. Tex. Nov. 3, 2014).

III. SAMSUNG CLAIM CONSTRUCTION ORDER

On July 9, 2018, Magistrate Judge Payne issued a "Claim Construction Opinion and Order" in a separate case involving the same plaintiff and patents. *CyWee Grp. Ltd. v. Samsung Elecs. Co.*, No. 17-140, Dkt. No. 117 (Ex. H). On July 23, 2018, Samsung filed objections under Federal Rule of Civil Procedure 72(a) and Local Rule CV-72(b). *Id.*, Dkt. No. 125 (Ex. I). CyWee responded on July 31, 2018. *Id.*, Dkt. No. 128 (Ex. J). The Court has ordered a hearing on these objections on August 10, 2018. *Id.*, Dkt. No. 131 (Ex. K). Huawei is not a party to the *Samsung* action and had no opportunity to participate in claim construction there. Also, "[w]here defendants have new arguments to bring to the attention of the court, defendants' rights to fully

[3] The '438 and '978 patents predate the America Invents Act enacted by Congress on September 16, 2011. Thus, the pre-AIA version of the cited statute applies.

litigate their claims are particularly persuasive." *Texas Instruments, Inc. v. Linear Techs. Corp.*, 182 F. Supp. 2d 580, 589 (E.D. Tex. 2002). Here, Huawei raises claim terms and arguments beyond and different from those raised by Samsung. Judge Payne's order is therefore not "dispositive" of any issue in this action, contrary to CyWee's suggestion. CyWee Br. at 5.

IV. DISPUTED CLAIM CONSTRUCTIONS

A. "six-axis motion sensor module"

Claims	CyWee Construction	Huawei Construction
'438 patent, claims 1, 3, 4, 5, 14, 15, 16, 17, and 19	This term need not be construed. In the alternative only, this term may be construed as: "a collection of components comprising a rotation sensor comprising one or more gyroscopes for collectively generating three angular velocities and one or more accelerometers for collectively generating three axial accelerations where said gyroscope(s) and accelerometer(s) are mounted on a common PCB"	"a module consisting of (i) a rotation sensor and (ii) one or more accelerometers, said module not having and using measured magnetisms and predicted magnetisms"

To secure issuance of the '978 patent, CyWee made a limiting amendment and representation to the Patent Office regarding the claim scope of the '438 patent. Huawei properly accounts for this intrinsic record; CyWee pretends the amendment and representation never happened. The Court should thus adopt Huawei's proposed construction.

1. CyWee's Amendment and Representation to the Patent Office

On January 28, 2013, during examination of the application that became the '978 patent, the Patent Office rejected then-pending claims 1-22 due to statutory double patenting over then-pending claims 1-20 of the earlier-filed application that became the '438 patent. At that time, the independent claims in the '978 application made no reference to magnetism—"measured" or "predicted"—and did not mention a "nine-axis motion sensor module." For example, then-pending claim 1 claimed only two sensors (comprising six axes):

> A 3D pointing device, comprising: an orientation sensor, generating an orientation output associated with an orientation of the 3D pointing device

> associated with three coordinate axes of a global reference frame associated with Earth; a rotation sensor, generating a rotation output associated with a rotation of the 3D pointing device associated with three coordinate axes of a spatial reference frame associated with the 3D pointing device; and a first computing processor, using the orientation output and the rotation output to generate a transformed output associated with a fixed reference frame associated with a display device.

'978 Prosecution History ("Exhibit A") at CYWEE_HUAWEI000235.

Then-pending claim 1 of the '438 application already contained the limitation "a six-axis motion sensor module" comprising two sensors: both "a rotation sensor" and "an accelerometer":

> A three-dimensional (3D) pointing device subject to movements and rotations in dynamic environments, comprising: a housing associated with said movements and rotations of the 3D pointing device in a spatial pointer reference frame; a printed circuit board (PCB) enclosed by the housing; ***a six-axis motion sensor module*** attached to the PCB, ***comprising a rotation sensor*** for detecting and generating a first signal set comprising angular velocities ωx, ωy, ωz associated with said movements and rotations of the 3D pointing device in the spatial pointer reference flame, ***an accelerometer*** for detecting and generating a second signal set comprising axial accelerations Ax, Ay, Az associated with said movements and rotations of the 3D pointing device in the spatial pointer reference frame; and a processing and transmitting module, comprising a data transmitting unit electrically connected to the six-axis motion sensor module for transmitting said first and second signal sets thereof and a computing processor for receiving and calculating said first and second signal sets from the data transmitting unit, communicating with the six-axis motion sensor module to calculate a resulting deviation comprising resultant angles in said spatial pointer reference frame by utilizing a comparison to compare the first signal set with the second signal set 'whereby said resultant angles in the spatial pointer reference flame of the resulting deviation of the six-axis motion sensor module of the 3D pointing device are obtained under said dynamic environments.

'438 Prosecution History ("Exhibit B") at CYWEE_HUAWEI000483.

Because of the overlap between the pending claims in the two applications, the Patent Office (1) rejected the '978 claims for "double patenting" under 37 C.F.R. § 1.78(b), which required elimination of "conflicting claims" in co-pending applications "filed by the same applicant," and (2) instructed that "Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications."

Ex. A at CYWEE_HUAWEI000235 (January 28, 2013 Non-Final Rejection).[4]

In response, Applicant did not traverse or otherwise challenge the PTO's conclusion. Nor did it "cancel the conflicting claims." Instead, it chose to "maintain a clear line of demarcation between the applications" by (1) amending the independent claims of the '978 patent, adding for the first time the limitations "a nine-axis motion sensor module," "measured magnetisms," and "predicted magnetisms," and (2) representing that the invention of the '438 application "includes the claimed subject matter of a six-axis motion sensor module *without having and using measured magnetisms and predicted magnetisms*." *Id.* at CYWEE_HUAWEI000210-12 (April 17, 2013 Applicant Arguments/Remarks Made in an Amendment) (emphasis added). CyWee further represented to the Patent Office that its response served to "to fully patentably differentiate and provide clear line of demarcation between this application and [the '438 application]." *Id.*

With this amendment and representation, CyWee established the required "clear line of demarcation" between the '978 patent's claims of a "nine-axis motion sensor module" having and using "measured magnetisms" and "predicted magnetisms," and the '438 patent's claims of a "six-axis motion sensor module without having and using measured magnetisms and predicted magnetisms." *Id.*

Following this amendment and representation, the Patent Office allowed the '978 patent claims without further amendment or response. *Id.* at CYWEE_HUAWEI000186-89 (June 25, 2013 Notice of Allowance).

2. <u>The Construction Must Exclude Magnetic Sensors to Account for the Amendment and Representation CyWee Made to Obtain Allowance</u>

The Supreme Court long ago held that representations made by a patentee in prosecuting a later patent application that distinguish an earlier related application limit the claims of that

[4] Then-effective 37 C.F.R. § 1.78(b) stated: "Where two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application."

earlier application. *McClain v. Ortmayer*, 141 U.S. 419, 425, 12 S. Ct. 76, 78 (1891) (construing a claim in a first patent consistent with "the theory of the patentee himself" as expressed in his "application for his second patent"). Similarly, "[t]he doctrine of prosecution disclaimer is well established in Supreme Court precedent, precluding patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution." *Omega Eng'g, Inc, v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (calling this a "fundamental precept in our claim construction jurisprudence"); *see also Ormco Corp. v. Align Tech., Inc.*, 498 F.3d 1307, 1314 (Fed. Cir. 2007) ("statements from prosecution of a familial patent relating to the same subject matter… are relevant in construing the claims at issue"). "Prosecution disclaimer can arise from both claim amendments and arguments made to the PTO." *Tech. Properties Ltd. LLC v. Huawei Techs. Co.*, 849 F.3d 1349, 1357 (Fed. Cir. 2017).

The Court should apply this doctrine and construe "six-axis motion sensor module" consistent with "the theory of the patentee himself," i.e., the amendment and representation CyWee made to distinguish the claims of the '438 and '978 patent applications. The correct construction of "six-axis motion sensor module" must reflect the "clear line of demarcation" CyWee fashioned during the prosecution history to overcome a double-patenting rejection and secure allowance of the '978 patent claims. This is particularly so where, as here, the patentee disclaimed the subject matter both in its claim amendments and in its arguments. *See Tech. Props. Ltd.* 849 F.3d at 1357. First, CyWee amended its claims to establish that the claimed module in the '978 patent has and uses "measured magnetisms" and "predicted magnetisms." Ex. A at CYWEE_HUAWEI000203. Second, CyWee argued that its claims should be allowed because the claimed module in its '438 patent does not "hav[e] and us[e] measured magnetisms and predicted magnetisms." *Id*. at CYWEE_HUAWEI000211.

Huawei's proposed construction incorporates verbatim this clear disclaimer, which the patentee expressly made to, in its own words, "fully patentably differentiate" the '438 and '978 patent claims. *Id.* at CYWEE_HUAWEI000210; *Tech. Props. Ltd.*, 849 F.3d at 1358 (holding that "[t]he district court's construction properly includes both of the patentee's clear disclaimers"

made to show the claim was "distinguishable"); *Norian Corp. v. Stryker Corp.*, 432 F.3d 1356, 1362 (Fed. Cir. 2005) (finding disclaimer where "in the course of amending, the patentee expressly spoke to the meaning of the amended claim"); *Omega Eng'g, Inc, v. Raytek Corp.*, 334 F.3d 1314, 1327 (Fed. Cir. 2003) (applicant who "stated in a public record [during prosecution] what his invention could not be" made "a deliberate surrender of claim scope").

CyWee attempts to rewrite the file history, diminishing the "clear line of demarcation" into something that "merely points out the differences between the two patents' claims." CyWee Br. at 18-19. CyWee and Dr. LaViola acknowledge the first half of the "clear line of demarcation" from the file history: the amendment to the '978 claims created "differences between the two patents' claims." *Id.*; LaViola Decl. ¶ 27. But CyWee and Dr. LaViola (i) fail to address the applicant's simultaneous representation that the '438 claims do not "hav[e] and us[e] measured magnetisms and predicted magnetisms" (Ex. A at CYWEE_HUAWEI000211); (ii) fail to mention that this representation was a prerequisite to allowance; and (iii) then seek to eliminate any trace of either the difference or the representation acknowledging it by reading the '438 claim as if none of this had ever happened.

CyWee's construction is improper. "The patentee is held to what he declares during the prosecution of his patent." *Gillespie v. Dywidag Sys. Int'l, USA*, 501 F.3d 1285, 1291 (Fed. Cir. 2007); *Pall Corp. v. PTI Techs. Inc.*, 259 F.3d 1383, 1393 (Fed. Cir. 2001) ("The public notice function of patents requires that a patentee be prevented from expressly stating during prosecution that the claims do not cover a particular device and then later suing for infringement by that same device."), *vacated on other grounds*, 535 U.S. 1109 (2002). And CyWee's construction would be unfair to Huawei and other industry participants, because a manufacturer of accused devices is "entitled to rely on the surrender of claimed subject matter made in the prosecution history and contained in the file wrapper." *Pall Corp.*, 259 F.3d at 1393.

CyWee may argue that the Applicant did not need to make this representation to overcome the double-patenting rejection because it had already amended the '978 claims. The representation's timing and subject matter cast a shadow over that argument, but the argument is

also contrary to law:

> [T]he scope of surrender is not limited to what is absolutely necessary…; patentees may surrender more than necessary. When this happens, we hold patentees to the actual arguments made, not the arguments that could have been made. The question is what a person of ordinary skill would understand the patentee to have disclaimed during prosecution, not what a person of ordinary skill would think the patentee needed to disclaim during prosecution.

Tech. Props. Ltd., 849 F.3d at 1359 (citations omitted); *see also Fenner Invs., Ltd. v. Cellco P'ship*, 778 F.3d 1320, 1325 (Fed. Cir. 2015) ("[T]he interested public has the right to rely on the inventor's statements made during prosecution, without attempting to decipher whether the examiner relied on them, or how much weight they were given"); *Norian Corp.*, 432 F.3d at 1361-62 ("[T]here is no principle of patent law that the scope of a surrender of subject matter during prosecution is limited to what is absolutely necessary to avoid . . . the basis for an examiner's rejection.") Here, one of ordinary skill would understand that the patentee meant exactly what it said during prosecution: modules "having and using measured magnetisms and predicted magnetisms" are not within the scope of the '438 patent's claims. Ex. A at CYWEE_HUAWEI000211; Welch Decl. ¶¶ 55-57. That is Huawei's proposed construction.

3. <u>The Patentee Expressly Defined the Six Axes of the "Motion Sensor Module"</u>

The specification of the '438 patent sets forth an express definition of "six-axis" in the context of this claim term. *See Phillips*, 415 F.3d at 1321 (the specification "acts as a dictionary when it expressly defines terms used in the claims . . . ."); *Profectus Tech. LLC v. Huawei Techs. Co.*, No. 6:11-cv-474, 2014 U.S. Dist. LEXIS 53157, at *18–19 (E.D. Tex. Apr. 16, 2014) (adopting express definition of "picture frame" in specification). Specifically, "[t]he term 'six-axis' means the three angular velocities ωx, ωy, ωz and the three axial accelerations Ax, Ay, Az." '438 patent at 8:10–12. Huawei's proposed construction applies this express definition of "six-axis" in the hardware context to clarify that the claimed "six-axis motion sensor module" consists of: "(i) a rotation [*i.e.*, angular] sensor and (ii) one or more accelerometers." Such a construction is especially appropriate given the patentee's disclaimer of "measured magnetisms

and predicted magnetisms" discussed above, which eliminates a magnetometer as a candidate sensor in the "six-axis sensor module." Further, the patentee's amendment that the claimed '978 motion sensor module is "nine-axis" in order to create a "clear line of demarcation" between it and the "six-axis" module of the '438 patent cuts against CyWee's proposed interpretation would improperly broaden the claim by holding that "six-axis" actually means "at least six axes." *See* CyWee Br. at 16. In particular, permitting the term to have a meaning of "at least six-axes" as CyWee proposes would allow the '438 claims to include the nine-axis module claimed in the '978 patent, restoring the overlap that prompted the double-patenting rejection during prosecution, and completely ignoring the amendment and representation made by the patentee in order to overcome that rejection and secure allowance.

Importantly, there is no support for a broader construction in the specification of the '438 patent. *See Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) ("[T]he test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date."); *also Lockwood v. Am. Airlines, Inc.*, 107 F.3d 1565, 1572 (Fed. Cir. 1997) (holding that applicants can satisfy the written description requirement "by such descriptive means as words, structures, figures, diagrams, formulas, etc., that fully set forth the claimed invention."). The example CyWee cites from the specification does not contradict Huawei's proposed construction. In its brief, CyWee highlights the description of a "combination of motion sensors, including the ones generated by accelerometers Ax, Ay, Az and the ones generated by gyroscopes ωx, ωy, ωz in dynamic environments" ostensibly as evidence that the claim "allows for the presence of any number of components." CyWee Br. at 17 (quoting the '438 patent at 4:20-26). But even assuming that the claim language is commensurate with this specific embodiment—despite the absence of the operative term "six-axis"—at most this passage is neutral as to the number of sensors required. In particular, the word "including" only designates that the specific listed sensor signals are present, not that other signals or sensors are

necessarily present as well.[5] And because the actual sensors listed as "include[ed]" in this example perfectly match Huawei's proposed construction, nothing in this passage refutes either Huawei's construction or the express definition from the specification on which it is premised.

Certainly nothing in this passage mandates the use of measured or predicted magnetisms, and nothing CyWee cites from the specification can overcome the disclaimer made during prosecution. *TMC Fuel Injection Sys., LLC v. Ford Motor Co.*, 682 F. App'x 895, 899 (Fed. Cir. 2017) ("even if there is claim language that might have otherwise left open the option . . . statements during prosecution definitively closed that door. This is precisely the point of prosecution disclaimer."). Thus, even if the '438 specification had contemplated a larger scope, the applicant disclaimed that scope and the examiner accepted this disclaimer in allowing the previously-rejected claims. *See Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 980 (Fed. Cir. 1995), *aff'd*, 517 U.S. 370 (1996) ("The written description part of the specification itself does not delimit the right to exclude. That is the function and purpose of claims.").

4. <u>The Term "Module" Is Taken Verbatim from the Claim Term</u>

Lastly, the Court should reject CyWee's attempt to eliminate the term "module" from the disputed claims. CyWee asserts that "Huawei's inclusion of the term 'module' in its proposed construction is misleading and would likely lead to confusion," and even argues that the specification does not support "inclusion of the word 'module.'" CyWee Br. at 17-18. But the word "module" is taken verbatim from the claim term itself: "six-axis motion sensor **module**." If use of the term "module" in Huawei's proposed construction somehow "is misleading and would likely lead to confusion," then the claim itself must also be "misleading" and "likely [to] lead to confusion."

[5] Should the Court conclude, however, that the term could include as-yet-unknown sensor combinations (despite the absence of any support for such in the specification), that conclusion should not allow CyWee to avoid the applicant's disclaimer of magnetometers. In that case, the Court should amend the language "consisting of" in Huawei's construction and insert "comprising," resulting in "a module comprising (i) a rotation sensor and (ii) one or more accelerometers, said module not having and using measured magnetisms and predicted magnetisms."

"All the limitations of a claim must be considered meaningful." *Unique Concepts, Inc. v. Brown*, 939 F.2d 1558, 1562 (Fed. Cir. 1991). With its strange criticism of the claim language itself, CyWee seeks to eliminate the word "module" from the claims altogether. It is unclear exactly how or when CyWee hopes to accomplish this, given that CyWee's primary argument that "the term need not be construed" necessarily would leave the term "module" fully intact in the claims. Regardless, "[i]t would run counter to this statutory provision for an applicant for patent to expressly state throughout his specification and in his claims that his invention includes [a specific limitation] and then be allowed to avoid that claim limitation in a later infringement suit." *Id.* at 1562; *also SanDisk Corp. v. Kingston Tech. Co.*, 695 F.3d 1348, 1368 (Fed. Cir. 2012) (rejecting a construction that "improperly ignores express limitations of the claims and uses the specification to broaden the patent."). The Court should reject CyWee's attempt to run away from the literal language of the claims.

B. "signal set"

Claims	CyWee Construction	Huawei Construction
'438 patent, claim 1 '978 patent, claim 10	This term has its plain and ordinary meaning and need not be construed.	"a sensor's x-axis measurement, y-axis measurement, and z-axis measurement"

Huawei's construction reflects this term's meaning as used in the specifications and as CyWee used it in prior litigation. CyWee's primary argument against Huawei's construction is that the Court should leave room for "signal sets" that are *not three-dimensional*—an argument that runs counter to the patents' basic purpose, which is to record and show movement in three-dimensional space. CyWee's construction would only confuse a jury tasked with considering claims that are already technical and complex. The Court should adopt Huawei's construction.

Huawei's construction arises directly from the specifications' treatment of "signal set." The patents uniformly and repeatedly describe a "signal set" as a three-dimensional output from a single sensor. *See* '438 patent at 7:64-66; 8:4-6; 8:46-56; 9:15-19; 11:36-44; 12:32-35; 12:64-13:4; '978 patent at 9:65-10:25; 11:15-27; 12:9-10; 15:10-17; 16:27-33; 16:60-17:5;

22:40-44; 24:42-44; 30:50-67; 33:37-47; 34:30-34; 34:43-52; 35:5-10. As Dr. Welch explains, a person of ordinary skill in the art would have understood "signal set" in the context of this patent to refer to the electrical measurements of the sensor module's respective sensors, which each yield a three-dimensional result. Welch Decl. ¶ 63.

CyWee agreed with this in prior litigation and even in this litigation (at least when discussing different issues). For example, seeking to avoid indefiniteness of various claims, CyWee and Dr. LaViola both acknowledge and agree that each "signal set" is a three-dimensional output from a single sensor, with CyWee seeking to construe "generating . . ." (*infra* § V.C) as "generating the orientation output based on (1) the first signal set (from an accelerometer), the second signal set (from a magnetometer) and the rotation output (from a rotation sensor or gyroscope)…" and Dr. LaViola supporting this construction in his declaration. LaViola Decl. ¶ 99. CyWee and Dr. LaViola have taken this position repeatedly across several cases—as they must, since the patents contemplate navigating three-dimensional space using three-dimensional signals from three-dimensional sensors. *CyWee v. Samsung*, Dkt. No. 66 at 19 (Ex. D); *CyWee v. Motorola*, Dkt. No. 38 at 14 (Ex. L).

Despite all this, CyWee now argues that the Court should not adopt Huawei's construction of "signal set" because the output of each sensor *might not be three-dimensional*, arguing that "Claim 10 of the '978 patent does not require that the first and second signal sets include three values." CyWee Br. at 19. CyWee's argument is contrary to the patents' entire purpose (to navigate three-dimensional space). Indeed, the specifications call the "present invention" three-dimensional ('438 patent at 1:15-23; '978 patent at 1:20-27); every reference to "signal set" in the specifications refers to a three-dimensional signal; and all of the signal set math in the patents is three dimensional (*see, e.g.*, '438 patent at 12:32-13:43; '978 patent at 22:34-67, 31:4-50). *See Verizon Servs. Corp. v. Vonage Holdings Corp.*, 503 F.3d 1295, 1308

(Fed. Cir. 2007) ("When a patent thus describes the features of the "present invention" as a whole, this description limits the scope of the invention").[6]

CyWee's second argument is a red herring: CyWee worries that Huawei's construction "could be read to require a direct comparison of those signal sets" involved in constructions such as "utilizing a comparison to compare the first signal set with the second signal set." Br. at 20. But that is an entirely separate question. CyWee seeks to conflate two issues: the meaning of "signal set," and the meaning (or lack thereof) of "utilizing a comparison to compare." Although Huawei does not agree with Judge Payne's conclusion in the *Samsung* matter that the "patents acknowledge the methodology does not invoke a precise apples-to-apples comparison" between signal sets but instead "requires some conversion," (*CyWee v. Samsung*, Dkt. No. 117 at 17 (Ex. H)), there is no conflict between that conclusion and the separate concept that each "signal set" represents "a sensor's x-axis measurement, y-axis measurement, and z-axis measurement."

C. "global reference frame associated with Earth"

Claims	CyWee Construction	Huawei Construction
'978 patent, claim 10	This term has its plain and ordinary meaning and need not be construed. In the alternative, this term may be construed as follows: "reference frame with axes defined and fixed with respect to the Earth"	"reference frame with an origin at a fixed point on Earth"

The parties agree on almost all aspects of how to construe this claim. They have separately agreed that a "reference frame" is "a coordinate system having axes that intersect at an origin," and that the "global reference frame associated with Earth" must have axes defined and fixed with respect to Earth. The only difference between their constructions is that Huawei's construction calls for "an origin at a fixed point on Earth," and CyWee's does not. As a result of this difference, CyWee's construction contradicts the specification, CyWee's own expert, and

[6] If nothing else, CyWee's argument should convince the Court that plain and ordinary meaning cannot suffice on this claim, as the parties do not agree on that meaning. CyWee argues that "adopting the term's plain and ordinary meaning is the only way to ensure accurate and uniform interpretation of the term in this case" (CyWee Br. at 19), but the opposite is true.

common sense.

The '978 patent's specification shows most persuasively why the Court should adopt Huawei's construction. The patent's preferred embodiment includes "a 3D pointing device" and "a 2D display device." '978 patent at 11:48-50 ("[T]he electronic device 500 may comprise two parts 560 and 570 in data communication with each other."); *see also id.* at Fig. 5; 5:34; 26:10-12. CyWee asserts that Huawei infringes by providing devices that it contends are both "a 3D pointing device" and "a 2D display device," but agrees that the pointing and display devices can also be separate. Dkt. No. 79 at 24-25; *CyWee v. Samsung*, Dkt. No. 66 at 16 (Ex. D). The specification further provides that "[f]or proper interaction with the use of the pointing device, when the user moves the pointing device, the pointer on the screen is expected to move along with the orientation, direction and distance travelled by the pointing device." *Id*. at 1:56-61 (numbering omitted). The '978 patent claims an improved mechanism for performing this function using three reference frames: the "spatial reference frame" (which the parties have agreed is fixed to the "3D pointing device"), the "fixed reference frame associated with a display device" (which the parties agree does not require construction), and the "global reference frame associated with Earth," the subject of this dispute.[7] The '978 patent neither describes nor claims any other mechanism to track the "orientation, direction and distance travelled by the pointing device," nor is any other required under Huawei's construction. *Id*. at 1:58-59.

In addition, other portions of the '978 specification similarly require or assume that the global reference frame has a fixed origin. Figure 9 and its accompanying text teach behavior based on "imaginary light beams" running from the 3D pointing device to the display device—actually calculated by the '978 patent's asserted invention—and teach calculating the distance between the 3D pointing device and the display device. '978 patent at 20:32-38. None of these calculations are possible unless the 3D pointing device and the display device share a common

[7] The full agreed construction for "spatial reference frame" is "frame of reference associated with the 3D pointing device, which always has its origin at the same point in the device and in which the axes are always fixed with respect to the device."

reference frame with a fixed origin. Welch Decl. ¶ 48, 73. Again, the parties agree this missing reference frame cannot be the "spatial reference frame" or the "fixed reference frame associated with a display device"; it must be the "global reference frame associated with Earth." Dkt. No. 72 at 1; Welch Decl. ¶ 69. Finally, the specification further explains that the spatial pointer reference frame and global reference frame associated with Earth are distinct: "a movement pattern in a display frame different from the spatial pointer reference frame may be obtained according to the mapping or translation of the resultant angles of the resultant deviation onto said movement pattern." '978 patent at 5:8-11. In other words, the global reference frame associated with Earth must be separate from the spatial pointer reference frame as well as the display reference frame in order to serve as a common reference for both and allow transformations between both.

The Court can quickly dismiss CyWee's main argument against Huawei's construction: that it "could be read to require that the origin be on the surface of the Earth," and thus "would improperly exclude reference frames having an origin at or near the center of the Earth." CyWee Br. at 21. To make this argument, CyWee misquotes Huawei's construction, which appears in the parties' P. R. 4-3 statement as "reference frame with an origin at a fixed point on Earth" (Dkt. No. 72-1 at 21-22); CyWee incorrectly quotes this construction as "reference frame with an origin at a fixed point on the Earth," and Dr. LaViola uses this erroneous language to support his opinion. *See* LaViola Decl. ¶ 122. Properly read, Huawei's construction does not limit the origin in the manner that CyWee describes; however, if there is any concern that it does, the Court can cure it by substituting "reference frame with an origin fixed relative to Earth." This is consistent with what Dr. LaViola stated in *Samsung* when he opined that the global reference frame can include "both reference frames with an origin at or near the center of the Earth, as well as reference frames with an origin elsewhere, such as a specific location at or near the surface of the Earth." *CyWee v. Samsung*, Dkt. No. 71-1 ¶ 31 (Ex. F).

Finally, CyWee briefly argues that Huawei's construction "would further exclude other reference frames such as the North-East-Down (NED) or East-North-Up (ENU) reference

frames," which do not have fixed origins. CyWee Br. at 21-22 (citing Noureldin § 2.2.3). But NED and ENU reference frames cannot be "global reference frames" under the specification, *see supra*, or even according to CyWee's and Dr. LaViola's statements *in this case*—CyWee and Dr. LaViola agree that "[t]he term 'global reference frame' or 'global frame of reference' is a commonly used term of art, which refers to a *fixed frame, against which the position and orientation of moving frames can be measured*." CyWee Br. at 21 (citing LaViola Decl. ¶ 123) (emphasis added). CyWee admits that NED and ENU reference frames have an origin at "the center of the sensor frame" and thus move with the 3D pointing device; precisely because they lack a fixed origin, these reference frames cannot measure the "position" of anything, even themselves. Finally, the Noureldin reference, on which CyWee and Dr. LaViola rely, itself distinguishes between an ENU frame and an exemplary global reference frame, the "Earth Fixed Frame," as shown in Noureldin Figure 2.2. Welch Decl. ¶ 75.

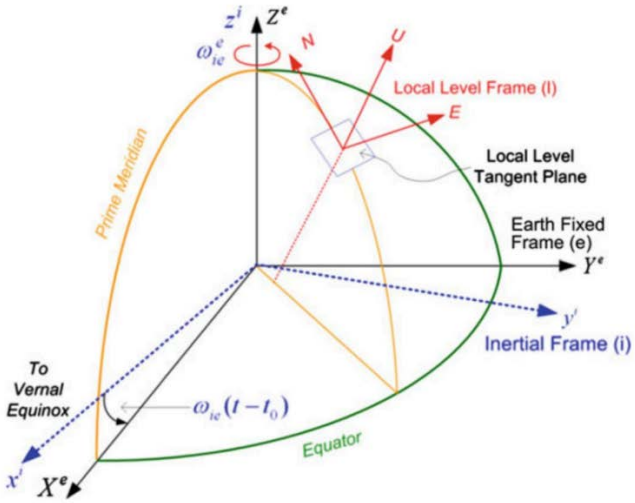

Fig. 2.2 The local-level ENU reference frame in relation to the ECI and ECEF frames

CyWee's construction cannot be correct even according to its own sources. Huawei's construction, in contrast, allows the origin of the global reference frame to be fixed anywhere on Earth, including the center of the Earth, the surface, or in the sky. As Dr. Welch discusses, the precise location of an origin is immaterial in any case as long as it remains fixed. Welch Decl. ¶ 76. The Court should adopt Huawei's construction.

CyWee's construction is also overly narrow. In contrast with Huawei's construction, CyWee's construction would allow tracking of the "orientation" of the "3D pointing device," by comparing the "spatial reference frame" (origin on the pointing device) to the originless "global reference frame associated with Earth," but would not allow tracking of the "direction and distance travelled by the pointing device," as performed by the preferred embodiment. This failure alone should doom CyWee's construction of this claim. *E.g., Accent Packaging, Inc. v. Leggett & Platt, Inc.*, 707 F.3d 1318, 1326 (Fed. Cir. 2013) ("[A] claim interpretation that excludes a preferred embodiment from the scope of the claim is rarely, if ever, correct.").

CyWee's construction also fails because it contradicts the opinions of its own expert. The '978 patent is replete with references to "axial acceleration," which Dr. LaViola acknowledges "can have multiple interpretations depending on the 3 type of forces (gravity, linear, centrifugal) that can act on an accelerometer." LaViola Decl. ¶ 56. Arguing against indefiniteness, Dr. LaViola further opines that the patent "plainly state[s] that an accelerometer is subject to multiple sources of acceleration, thus justifying the need for an 'enhanced comparison method,'" and that "[a] [person of ordinary skill] would understand that the methods described in the patents are designed to handle different types of acceleration." LaViola Decl. ¶ 48. Whether or not Dr. LaViola is correct on indefiniteness—he is not, *see infra* at § V—his argument depends on his assertion that the '978 patent can separately track gravitational, linear and centrifugal acceleration. To do that, the patent must provide a reference frame with a fixed origin (Welch Decl. ¶¶ 73-74), which the parties agree cannot be the "spatial reference frame" or the "fixed reference frame associated with a display device," and which therefore must be the "global reference frame associated with Earth."

D. "using the orientation output and the rotation output to generate a transformed output associated with a fixed reference frame associated with a display device"

Claims	CyWee Construction	Huawei Construction
'978 patent,	"using the orientation output and	"using the orientation output and the

claim 10	rotation output to generate a transformed output representing a movement in a fixed reference frame that is parallel to the screen of the display device."	rotation output to generate a transformed output representing a two-dimensional movement in a fixed reference frame that is parallel to the screen of the display device"

In its opening brief, CyWee abandons its proposed construction from the Joint Claim Construction and Prehearing Statement, wherein CyWee originally asserted that this term should be construed as:

> using the orientation output and the rotation output to generate a transformed output represented by 2-dimensional movement in a plane that is parallel to the screen of a display device.

(Dkt. No. 72-1 at 18.) CyWee now argues that the Court should instead adopt "the same construction" Judge Payne found in the *Samsung* case.[8] Huawei's proposed construction is identical to that construction, save one word: "two-dimensional." For the reasons described below, the Court should add that word to Judge Payne's construction in the *Samsung* matter.

Huawei's proposed construction is taken nearly verbatim from the specification—including the word "two-dimensional." *E.g.*, '978 patent at 31:51–32:3 ("The transformed output $<d_x, d_y>$ represents a ***2-dimensional*** movement in a display plane in the fixed reference frame.") (emphasis added). Judge Payne's construction omitted the word "two-dimensional," explaining that this omission was designed to avoid tying the interpretation "to a particular embodiment." *CyWee v. Samsung*, Dkt. No. 117 at 13-14 (Ex. H). Enlarging the scope of movement beyond two dimensions, however, is inconsistent with both the remainder of the construction (which otherwise is correct) and the '978 patent specification.

The remainder of Judge Payne's construction, which CyWee does not dispute, specifies that the "movement" in question takes place "in a fixed reference frame that is parallel to the screen of the display device." "Parallel" here is used in its ordinary sense—"extending in the same direction, everywhere equidistant, and not meeting." Welch Decl. ¶ 84 and Welch Decl.

[8] Samsung has objected to the construction of this term entered in that case, and those objections remain pending. *See CyWee v. Samsung*, Dkt. No. 125 at 5 (Ex. I).

Ex. C. As a matter of simple geometry, for the "fixed reference frame" to be parallel to the "screen of the display device"—*i.e.*, "having the same distance continuously" between it and the screen of the display device—the "fixed reference frame" must be a plane, just like the "screen of the display device." Welch Decl. ¶ 84. And if the "fixed reference frame" is a plane, then any "movement" that takes place "in the fixed reference frame" must be two-dimensional. Welch Decl. ¶ 83. As such, the two-dimensional character of the "movement" in this construction is not merely imported from "a particular embodiment" as the *Samsung* order suggests, but is in fact mandated by the remainder of the construction itself.

The '978 patent specification confirms this conclusion. Specifically, the technical descriptions of the "transformed output" in the detailed description portion[9] of the specification expressly teach movement in just two dimensions. At 31:56-67, the specification describes the "transformed output $<d_x, d_y>$," and instructs that "d_x represents the movement along the X_D axis and d_y represents the movement along the Y_D axis." Later, at 33:4-11, the specification again refers to "transformed output $<d_x, d_y>$," and teaches that "d_x is the first movement component of the transformed output associated with the coordinate axis X_D of the fixed reference frame associated with the display device, while d_y is the second movement component of the transformed output associated with the coordinate axis Y_D of the fixed reference frame associated with the display device." In contrast, there is no written description support for a "transformed output" representing any type of movement other than two-dimensional. *See* 35 U.S.C. § 112; *Gentry Gallery, Inc. v. Berkline Corp.*, 134 F.3d 1473, 1480 (Fed. Cir. 1998) ("[C]laims may be no broader than the supporting disclosure.").

As such, reading the claim in light of the specification of the '978 patent leads to but one conclusion—also made explicit in the '978 specification—that "[t]he transformed output $<d_x, d_y>$ represents a *2-dimensional movement* in a display plane in the fixed reference frame parallel

[9] The Detailed Description contains the only substantive technical description of the invention, because the Abstract, Background of the Invention, and Summary of the Invention provide no substantive functional description of the "transformed output."

to the screen of the display device" as captured in Huawei's construction. '978 Patent at 31:59-62 (emphasis added). Requiring "two-dimensional" here does not improperly limit the claim to "a particular embodiment." Instead, the remainder of the *Samsung* construction requires that the "movement" be two-dimensional to make sense, and the specification provides written description support for no other interpretation. Moreover, adding the term "two-dimensional" eliminates ambiguity before the jury and, more importantly, forecloses the types of confusing arguments found in CyWee's opening brief.

Specifically, CyWee's arguments in its opening brief contradict its earlier position in this case. In its original proposed construction, CyWee itself championed a construction wherein the operative "movement" is "*2-dimensional* movement in a plane that is parallel to the screen of a display device." (Dkt. No. 72-1 at 18 (emphasis added).) After receiving the Samsung order, however, CyWee flipped its position. To justify this reversal, CyWee assembles largely irrelevant patent cites in its opening brief to try and backfill support for its new position. *See* CyWee Br. at 23-26. In particular, to create an illusion of support for a broader construction where none exists, CyWee resorts to a semantic bait-and-switch. CyWee starts with a premise—the "bait"—that is 100% true in this context: "the transformed output represents movement." *Id.* at 23. CyWee then misuses this premise to switch its argument from the real issue at hand (what the specification teaches about "movement" with respect to the claimed "transformed output") to a largely irrelevant discussion (what the specification says about "movement" generally). *Id.* at 24-25. And then—using lots of italics and bold font to emphasize instances of the word "movement"—CyWee relies on this irrelevant discussion to reach the fallacious conclusion that "Huawei's construction is contrary to the '978 patent itself, which teaches tracking of movement in three dimensions rather than two dimensions." *Id.* at 24.

The Court should disregard such deflection. The narrow issue before the Court on this term is the proper scope of the claimed "transformed output" and the specific "movement" that it represents. That the various and sundry components—the "accelerometer, gyroscope, and magnetometer"—of the overarching 3D pointing device can move "in three dimensions rather

than two dimensions" has nothing to do with resolving this narrow issue. CyWee Br. at 23-24. Nor does the fact that the disputed claim language is used in the Abstract and Background of the Invention, without more, dictate the scope of the claim language in the patent as a whole, as CyWee seems to argue. *See id*. at 25. The question is whether the "movement" the "transformed output represents" is "two-dimensional." And the agreed portions of the proposed constructions, as well as the actual technical portions of the specification, answer this question in the affirmative.

V. INDEFINITE CLAIM TERMS

A. "utilizing a comparison to compare the first signal set with the second signal set"

Claim	CyWee Construction	Huawei Construction
'438 patent, claim 1	This term need not be construed. In the alternative only, this term may be construed as: "determining or assessing differences based on a previous state associated with the first signal set and a measured state associated with the second signal set while calculating deviation angles"	Indefinite

A patent is indefinite "if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention." *Nautilus*, 134 S. Ct. at 2124. To avoid such an indefiniteness finding, "the patent and prosecution history must disclose a single known approach or establish that, where multiple known approaches exist, a person having ordinary skill in the art would know which approach to select." *Dow Chem. Co. v. Nova Chems. Corp. (Canada)*, 803 F.3d 620, 630 (Fed. Cir. 2015); *see Light Transformation Techs. LLC v. Lighting Sci. Grp. Corp.*, No. 2:12-CV-826-MHS-RSP, 2014 WL 3402125, at *8 (E.D. Tex. July 11, 2014) (finding the term "axis of light direction" indefinite where the patent "fails to identify the specific axis or direction" and the specification "illustrates numerous exemplary axes of light directions for any given viewpoint").

The plain language of the term "utilizing a comparison ***to compare*** the first signal set

with the second signal set" is indefinite. It requires "utilizing a comparison to compare" two values. These two values represent different concepts—"axial accelerations" (claim 1: "second signal set comprising axial accelerations") and "angular velocities" (claim 1: "first signal set comprising angular velocities"). The claim language provides no guidance as to how to "compare" these disparate sets of information. For example, does "compare" mean "determine which is greater as between two values," "determine a relative relationship between each value and some other relevant measure or parameter of the system," "determine a difference between two values and a relative relationship with respect to some other relevant measure or parameter of the system" etc. Welch Decl. ¶¶ 94-95. As such, one of ordinary skill in the art cannot be reasonably certain as to what it means to "compare" the two signal sets without having more information. *Id.* ¶ 97.

The specification does not provide the needed clarity. Indeed, the specification discloses a number of different ways of comparing angular velocities with axial accelerations, and one of ordinary skill in the art would know of myriad others. *Id.* ¶ 95. Such a calculation of the estimated orientation could be expressed in a variety of formats (*e.g.*, a quaternion format[10] or a deviation angle (*see* element 745 and, e.g., '438 patent at 14:47-15:7 (describing conversion from one to the other))), and depending on the orientation format selected, a POSITA may employ any one of a variety of methods to "compare" the signal sets. Welch Decl. ¶¶ 94-96. Because any number of ways to "compare" are possible, a person having ordinary skill in the art would not know "which approach to select." *See Dow Chem. Co.*, 803 F.3d at 630. Therefore, claim 1 of the '438 patent "fail[s] to inform, with reasonable certainty, those skilled in the art

[10] Although the '438 patent discloses the general approach of using "quaternions" to compare angular velocities to axial accelerations, it does not disclose using that approach to compare the "first signal set" and the "second signal set" as required in Claim 1 of the '438 patent. It only discloses comparing a first quaternion calculated from the first signal set with a second quaternion calculated from a combination of the first signal set *and* the second signal set.

about the scope of the invention," and the claim is indefinite. *See Nautilus*, 134 S. Ct. at 2124. [11]

CyWee's alternative construction does not attempt to resolve this ambiguity, but simply eliminates the word "compare" from the claim altogether. On its face, the claim requires not only "a comparison," but also separate use of that comparison to "compare" the two signal sets. So while CyWee expressly bases its construction on a combination of two definitions of the word "comparison"—one from the '438 specification at 2:27-29 (CyWee Br. at 7) and one that CyWee's expert posits is the definition "as used in mathematics, engineering, and computer science (*id*. at 9)—CyWee's construction simply omits any reference or description of the word "compare." The Court should reject such an approach. *See Unique Concepts*, 939 F.2d at 1562 ("All the limitations of a claim must be considered meaningful.").

B. "comparing the second quaternion in relation to the measured angular velocities ωx, ωy, ωz of the current state at current time T with the measured axial accelerations Ax, Ay, Az and the predicted axial accelerations Ax', Ay', Az' also at current time T"

Claims	CyWee Construction	Huawei Construction
'438 patent, claims 14 and 19	This term need not be construed. In the alternative only, this term may be construed as: "utilizing the second quaternion obtained from the measured angular velocities ωx, ωy, ωz of the current state at current time T, the measured axial accelerations Ax, Ay, Az, and the predicted axial accelerations Ax′, Ay′, Az′ also at current time T to obtain an updated state or updated quaternion."	Indefinite

Huawei asserts that this term renders claims 14 and 19 indefinite. CyWee argues that the term does not need to be construed, but offers a construction of "utilizing the second quaternion obtained from the measured angular velocities ωx, ωy, ωz of the current state at current time T, the measured axial accelerations Ax, Ay, Az, and the predicted axial accelerations Ax′, Ay′, Az′ also at current time T to obtain an updated state or updated quaternion." The patent does not support CyWee's construction, nor does CyWee's construction salvage this term from

[11] Samsung and Apple provided additional reasons why this term is indefinite, and Huawei hereby incorporates those reasons by reference. *CyWee v. Samsung*, Dkt. No. 67 at 4-12 (Ex. E), Dkt. No. 76 at 5 (Ex. G); *CyWee v. Apple*, Dkt. No. 59 at 9-11 (Ex. M).

indefiniteness.

As it did with respect to the term, "utilizing a comparison to compare the first signal set with the second signal set" term in claim 1, CyWee's construction attempts to write a limitation ("comparing") out of claim. CyWee's construction, however, ends up just as vague and ambiguous as the claim language, and is indefinite for all the same reasons as the claim language. Welch Decl. ¶ 106.

In addition to failing to specify what basis to use to make this comparison, this term fails to explain which values the claims call for comparing. The claim could be referring to any one of a number of possible permutations. As Dr. Welch explains, a POSITA might interpret this language in any of a number of different ways, including to mean that two values are fused together first, then compared to a third; that the first value is compared to the second and third values independently; or that some combination of comparisons is used. Welch Decl. ¶¶ 101-03.

The exemplary embodiments in the specification also fail to resolve the ambiguity in this term. CyWee itself argues against limiting the claims to a direct comparison between values, arguing that indirect comparisons are within the scope of the patent. CyWee Br. at 7. Such an open-ended understanding of the claim language would lead a POSITA to arrive at a multitude of plausible interpretations. Welsh Decl. ¶ 105. Because this term is unclear as to the values to be compared and the comparison to perform, claims 14 and 19 of the '438 patent "fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention," and the claims are indefinite. *See Nautilus, Inc.*, 134 S. Ct. at 2124.[12]

C. "generating the orientation output based on the first signal set, the second signal set and the rotation output or based on the first signal set and the second signal set"

Claim	CyWee Construction	Huawei Construction
'978 patent,	This term need not be construed. In the alternative, this	Indefinite

[12] Samsung provided additional reasons why this term is indefinite, and Huawei hereby incorporates those reasons by reference. *CyWee v. Samsung*, Dkt. No. 67 at 12-14 (Ex. E), Dkt. No. 76 at 5 (Ex. G).

claim 10	term may be construed as follows: "generating the orientation output based on (1) the first signal set (from an accelerometer), the second signal set (from a magnetometer) and the rotation output (from a rotation sensor or gyroscope) or (2) the first signal set (from an accelerometer) and the second signal set (from a magnetometer)"	

Huawei asserts that this term renders claim 10 indefinite. CyWee argues that the term does not need to be construed, but offers a construction of "generating the orientation output based on (1) the first signal set (from an accelerometer), the second signal set (from a magnetometer) and the rotation output (from a rotation sensor or gyroscope) or (2) the first signal set (from an accelerometer) and the second signal set (from a magnetometer)." The Court should find this term indefinite, as CyWee's construction has no clear basis in the patent and, in any event, does not resolve the ambiguities in the claim language.

This claim term does not clearly describe the scope of its associated claim as it does not clearly state whether it recites one or two embodiments. Specifically, one of ordinary skill would not understand whether the claim language refers to: (1) a single embodiment capable of generating the orientation output based on *both* "the first signal set, the second signal set and the rotation output" and, selectively, "based on the first signal set and the second signal set" or (2) whether the claim is directed to multiple embodiments, wherein one embodiment may generate the orientation output "based on the first signal set, the second signal set and the rotation output" and another embodiment may generate the orientation output "based on the first signal set and the second signal set." CyWee's construction does not resolve the ambiguity, and merely adds references to sensors described in the specification without actually defining any clear scope for the claim term itself.

Dr. LaViola's declaration does not even purport to support CyWee's definition, nor does it credibly argue that the claim term is definite as written. Instead, Dr. LaViola provides three of his own interpretations with inconsistent scope:

> the orientation output is based on (1) the first signal set, (2) the second signal set, and (3) the rotation output ***OR it is instead based on*** (1) the first signal set and (2) the second signal set.

LaViola Decl. at ¶ 103.

> The orientation is [*sic*] output is based on (1) and (2) ***and, optionally*** (3).

LaViola Decl. at ¶ 103.

> claim 10 reads on and covers a device that (1) calculates orientation based solely on an accelerometer and magnetometer when the device is *stationary* ***and*** (2) calculates orientation based on an accelerometer, gyroscope, and magnetometer when the device is *moving*

LaViola Decl. at ¶ 111.

Dr. LaViola points to nothing in the patent to support these readings, nor can he. First, the patent nowhere teaches any selection mechanism wherein it performs one type of comparison when the device is stationary and a different comparison when the device is moving. The patent also does not teach that the gyroscope is optional. The patent instead teaches the opposite. For example, Figure 7 describes an embodiment providing an orientation output "excluding said undesirable external interferences in the dynamic environments." Yet Figure 7 calls for obtaining both angular velocities and axial accelerations at time T. If the device is stationary, it would not register angular velocity, and would thus contradict Dr. LaViola's third definition. If the device is moving, it cannot correctly determine an orientation. Welch Decl. ¶¶ 110-115.

The phrase "based on" further compounds this term's uncertainty. This particular phrase is not given meaning in the specification, and appears to be unbounded in scope for the same reasons as "comparing" and "to compare." *See*, *supra* § V.A. Because this term is unclear as to the values to be compared and the comparison to perform, claim 10 of the '978 patent "fail[s] to inform, with reasonable certainty, those skilled in the art about the scope of the invention," and the claim is indefinite. *See Nautilus, Inc*. 134 S. Ct. at 2124. [13]

[13] Samsung provided additional reasons why this term is indefinite, and Huawei hereby incorporates those reasons by reference. *CyWee v. Samsung*, Dkt. No. 67 at 14-17 (Ex. E), Dkt. No. 76 at 5 (Ex. G).

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system per Local Rule CV-5(a)(3) on August 9, 2018.

/s/ Steven D. Moore
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